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File Code: 3410 **Date:** November 30, 1998
Route To:

Subject: Functional Assistance

To: George Asmus, District Ranger
Safford Ranger District
Coronado National Forest

As part of the investigation of the geometrid, *Nepytia janetae,* infestation on Mt. Graham, Arizona Zone Office entomologists Jill Wilson and Bobbe Fitzgibbon field checked the affected area on November 18, 1998. Elaine Lowery, a wildlife biologist with the Mount Graham Red Squirrel Project, met with Arizona Zone personnel. Ms. Lowery reported that, while the cone crop seems to have suffered from the insect defoliation, the squirrels have shifted location to unaffected portions of the mountain.

The populations of the geometrid appear to have declined somewhat from those present in April of 1998. Acres of defoliation were down from approximately 1,200 acres in the spring of 1998 to 176 acres recorded during the August 1998 aerial detection survey flight. However, many trees are still being heavily defoliated. Trees that retained the current years foliage but had been defoliated during the winter of 1997-8 had short, often deformed needles. The location of the highest geometrid population density has shifted from Hawk Peak to the vicinity of Emerald Springs.

A number of the trees with the heaviest defoliation were found to be infested with bark beetles. Spruce beetle, *Dendroctonus rufipennis,* is impacting the spruce. The spruce beetle outbreak could have started in the ice storm event during the winter of 1992-3 but has probably intensified as more trees have come under stress by defoliation. Numerous currently infested trees were observed within the defoliated area. As is typical for spruce beetle, predominantly large diameter trees are being selected for attack. Developing brood in most of the infested trees consisted of large larvae. These beetles would most likely emerge in summer 2000, though a one year life cycle has been been suggested for some areas in the southern rockies. Some older attacks were also present, evidenced by trees with red crowns and emergence holes on the bark. Jill's examination of the stand data for this area revealed two important items. First the spruce beetle rating system currently attached to RMSTAND doesn't seem to be calculating correctly, so the ratings, titled "beetle risk", found on page 5 of your stand exam printouts are incorrect. Second calculating stand ratings by hand produced largely moderate or "high" moderate ratings, that is in the upper range of moderate. The main reason more of the sites don't rate higher is that the site indices for spruce are low on Mt. Graham, 40-50. It is not clear how important this factor is relative to the other factors in the rating system, definitely this area has sufficient large trees and sufficient densities to support outbreak development. If the outbreak continues to grow, it could significantly affect stand structure in the area, reducing the average age of surviving trees, lowering the average diameter, density and height of the stand, and reducing the spruce component. In addition to spruce beetle, some defoliated fir were found to be infested with *Dryocoetes confusus,* the western balsam bark beetle. This beetle is commonly associated

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with subalpine and corkbark fir in the Southwest and is the most important bark beetle affecting these species.

Continuation of the evaluation will include impact plots that are scheduled to be set up in the spring of 1999. We are appreciative of the assistance district personnel have given us during the planning process for this evaluation. The district will continue to receive updates on the progress of the evaluation as they are available. If you have any questions, please call Bobbe at 520-556-2072 or Jill at 520-556-2074.

/s/ Jill L. Wilson

/s/ Bobbe Fitzgibbon

JILL L. WILSON & BOBBE FITZGIBBON

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